

ABSTRACT OF THE DISCLOSURE

A photomask (1900) for producing partial-depth features (712 and 912) in a photo-imageable polymer layer (412) on a wafer of a chip scale package (200) using exposure tools capable of resolving sizes of a critical dimension or larger, has a plurality of chrome lines (2101-2103). Each chrome line has a width (2105) that is less than the critical dimension, and each chrome line of the plurality of chrome lines is spaced apart less than the critical dimension. The plurality of chrome lines produces a single partial-depth feature, such as a via, through part of a thickness of the polymer layer. Alternatively, the photomask has a plurality of chrome circles (2206), each chrome circle having a diameter less than the critical dimension and being spaced apart less than the critical dimension, which produces the partial-depth feature. The photomask may also have chrome of width greater than the critical dimension and spaced from other chrome by a distance greater than the critical dimension, which produces a full-depth feature through the entire thickness of the polymer film. The partial-depth feature and the full-depth feature are produced substantially simultaneously during a single series of photo-imaging steps. By preselecting a size, shape and distance between the chrome, the photomask is capable of inscribing discernable markings on the polymer layer, of changing the thickness of the polymer layer, and of changing an optical property of the surface of the polymer layer. The abstract is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims pursuant to 37 C.F.R. §1.72(b).